

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested.

Claims 1, 4, 5, 12, 19-22, 24-29, 33, 35-40, 49-61, and 63 are pending. Claims 22, 24-29, 33, and 35-40 were previously withdrawn. Claims 2-3, 6-11, 13-18, 23, 30-32, 34, 41-48, and 62 were previously canceled. Claim 1 is amended. Support for amended claim 1 is found in the previously presented claims and in at least specification page 11, lines 22-27. Thus, no new subject matter is added.

Applicants wish to thank the Examiner for the courtesies extended during the personal interview of January 7, 2010. As discussed during the interview, Applicants have now amended claim 1 to more clearly recite that the second protective layer is deposited "directly" on the first protective layer.

The outstanding Office Action rejected claims 1, 4, 5, 12, 19, 21, and 49-61 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak (U.S. Publication No. 2003/0170466) in view of Lingle (U.S. 6,445,503). The Office Action rejected claim 20 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak in view of Lingle and Szczyrbowski et al. (U.S. 5,279,722). The Office Action finally rejected claim 63 as unpatentable under 35 U.S.C. § 103(a) over Stachowiak in view of Lingle and Farmer et al. (U.S. 4,973,511).

Amended claim 1 recites a method for producing a glazing having a multilayer coating deposited on a glass substrate by sputtering in a low oxygen content atmosphere. The method includes depositing a first transparent dielectric layer, then depositing a functional Ag-based infrared reflective layer, and depositing on the Ag-based layer a first protective layer in an atmosphere containing a maximum of 20% oxygen with a maximum thickness of 3 nm and composed of a material having an electronegativity difference from oxygen less than 1.9 and less than that of the Ag-based layer. A second protective layer is deposited directly on the first protective layer in an atmosphere containing a maximum of 20% oxygen

with a maximum thickness of 7 nm and composed of a material having an electronegativity difference from oxygen greater than 1.4. Finally, a second transparent dielectric layer is deposited.

This claimed process of forming a coating having two adjoining protective layers above the silver layer having specific electronegativity values with respect to oxygen results in a coating that protects the silver layer from oxidation during formation of the coating and during thermal heat treatment of the glazing. None of the cited references suggest the claimed method.

The Office Action relies primarily on Stachowiak as disclosing a coating formed by depositing a first dielectric layer, a silver layer, a first protective layer less than 3 nm thick (e.g., NiCrOx), a second layer less than 7 nm thick (e.g. TiOx), and a second dielectric layer. Notably, paragraph 45 of Stachowiak discloses that the TiOx dielectric layers have a wide thickness ranging from 10-900Å, and is concerned with changing the index of refraction from the bottom to the top dielectric layers in the system. However, in all of the Stachowiak examples that utilize a TiOx layer above an Ag layer, the TiOx layer is at least 120Å thick, well outside of the claimed maximum of 7 nm. Stachowiak does not disclose or suggest that the TiOx layer is a protective layer. While acknowledging that Stachowiak permits sub-stoichiometric TiOx, the primary purpose of the specifically disclosed dielectric TiOx layers is to (a) increase visible transmission, (b) decrease visible reflection, and (c) provide neutral color. See ¶ 0043. In addition, Stachowiak expressly states that “no example herein was considered heat treated.” ¶ 0048.

The Office Action recognizes that Stachowiak does not disclose that the protective layers are deposited in an atmosphere of no more than 20% oxygen. Page 5. The Office Action therefore relies on Lingle for the disclosure of these features, and asserts that it would have been obvious to combine Lingle with Stachowiak to allow for a heat treatable layer

system. Pages 5 and 8. More specifically, the Office Action cites to TiOx layers formed in less than 20% oxygen in Lingle Table III. In fact, the TiOx layers in Table III are below and in contact with the silver layer rather than above the first protective layer as recited in claim 1. See layers (b) and (f) in Lingle Table III. Like Stachowiak, Lingle teaches only a single protective layer above the silver layer. Lingle does not disclose or suggest two protective layers as claimed above the silver layer. More particularly, Lingle does not disclose or suggest forming a TiOx layer in a low oxygen atmosphere directly on the first protective layer. Thus, the TiOx layer of Lingle is in a different position in the stack than the TiOx layer of Stachowiak and is not formed directly on the first protective layer as recited in claim 1. In fact, Lingle teaches that the oxide layer above the protective NiCrOx layer is formed in 50% oxygen, contrary to the less than 20% oxygen for forming the second protective layer as recited in claim 1. See Lingle Table III. Thus, the combination of Stachowiak and Lingle provides no reason for a person of ordinary skill in the art to apply the claimed method of depositing two protective layers in a low oxygen atmosphere above a silver layer.

Applicants also respectfully take issue with the Office Action's statements that a person of ordinary skill in the art would form the TiOx layer in Stachowiak as taught by Lingle in order to obtain a heat treatable layer system. Pages 5 and 8. Lingle does indicate that the TiOx is believed to play a role in providing for heat treatability (col. 10, lines 1-18). However, the TiOx layer in Lingle is in a very specific location in the stack directly in contact with and under the silver, not as the second protective layer above the silver. A person of ordinary skill in the art would know that small differences between layer systems can make one system heat treatable and another not heat treatable. Accordingly, a person of ordinary skill in the art would not expect that moving the Lingle TiOx layer to an entirely different position in the coating stack (i.e., above the NiCrOx layer of Stachowiak and no longer in contact with the silver) would make the Stachowiak coating heat treatable.

In addition, Lingle more broadly teaches and claims that his specific 10 or 12 layer system results in a heat treatable coating, not simply that adding a substoichiometric TiOx contact layer results in a heat treatable coating. See, e.g., Abstract, col. 3 line 54 to col. 5, line 7, and col. 10, lines 30-34. Lingle's 10 or 12 layer system (see, e.g., Table II, col. 5) has numerous differences from the layer systems of Stachowiak. Lingle's teaching that his specific 10 or 12 layer systems are heat treatable would thus further lead the person of ordinary skill in the art not to expect that simply forming the TiOx layer of Stachowiak by the method disclosed in Lingle would transform the Stachowiak coating system into one that is heat treatable. For all of the above reasons, Applicants respectfully submit that it would not have been obvious to combine Stachowiak and Lingle as suggested in the Office Action.

In addition, for the reasons previously presented in Applicants' May 26, 2009 Amendment, Applicants again submit that Farmer et al. and Szczyrbowski et al. do not overcome the deficiencies in combining Stachowiak and Lingle.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for claims 1, 4, 5, 12, 19-21, 49-61, and 63 is earnestly solicited.

It is respectfully submitted that the present application is in condition for allowance, and a favorable decision to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.



Andrew M. Ollis
Attorney of Record
Registration No. 40,749

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 07/09)